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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,933	09/29/2003	Yuan-Hua Kao	Kao 4-23-15	1639

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BROSEMER, KOLEFAS & ASSOCIATES, LLC - (LUCENT)  
1 BETHANY ROAD  
BUILDING 4 - SUITE # 58  
HAZLET, NJ 07730

EXAMINER

SINGH, DALZID E

ART UNIT PAPER NUMBER

2613

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/673,933

Applicant(s)

KAO ET AL.

Examiner

Dalzid Singh

Art Unit

2613

**– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the nonlinear-phase-shift compensation as recited in claims 3 and 17 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1, 3, 8, 15 and 17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 3 and 17 recite, "...nonlinear-phase-shift compensation...". There is no structure or circuit diagram provided to teach a person of ordinary skill in the art how the nonlinear-phase-shift compensation is provided or connected in the system. Therefore, based on this, the specification fails to provide an enabling disclosure for claim 3.

Claims 1, 8 and 15, recite. "...synchronous data signals..." There is no structure or circuit diagram provided to teach a person of ordinary skill in the art how the data signals are synchronized. The figures show the data signals (DPSK) and (ASK) are independent of each other. There is no connection between the two data signals. Therefore, based on this, the specification fails to provide an enabling disclosure for claims 1, 8 and 15.

***Double Patenting***

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1, 2, 8, 9, 13, 15 and 16 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 5 and 7 of copending Application No. 10/673,701 (hereinafter "app701"). Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims are similar.

Regarding claims 1, 8 and 15, app701 disclose two modulation system driven by data signals (see claim 1) and differs from the claimed invention in that app701 does not disclose that the data signals are synchronous. However, it would have been obvious to an artisan of ordinary skill in the art to provide synchronous data signals to the modulators.

Regarding claims 2 and 16, app701 discloses balanced detector (see claim 7).

Regarding claim 9, app701 disclose modulators selected from group consisting of Mach-Zehnder modulator, single waveguide modulators, or an electro-absorption modulator (see claim 2).

Regarding claim 13, app701 discloses differential encoder (see claim 5).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 2, 4-6, 8-13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vrazel et al (US Pub. No. 2003/0198478).

Regarding claim 1 (as far as understood in view of the 112 1<sup>st</sup> paragraph), Vrazel et al disclose a communication method for multilevel coded optical signal transmission, as shown in Fig. 4B, comprising the step of:

driving at least two modulators (470 and 475) with at least two data signals (D<sub>1</sub> and D<sub>2</sub>) to generate an optical signal using differential phase shift keying and amplitude shift keying modulation (see paragraph [0030]).

Vrazel et al disclose driving the modulators with data signals and differs from the claimed invention in that Vrazel et al do not disclose the data signals are synchronized and have the same data rate. However, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide the data signals to be synchronous and having the same data rate.

Regarding claims 2 and 16, the system receiving the optical signal using a receiver including a balanced detector for detection of the differential phase shift keyed portion of the optical signal (see paragraph [0075]).

Regarding claims 4, 5, 10 and 11, Vrazel et al do not disclose that the amplitude shift keying modulation generates chirp or chirp-free optical signals. However, it would have been obvious to an artisan of ordinary skill in the art to generate chirp or chirp free optical signal.

Regarding claims 6 and 12, Vrazel et al differ from the claimed invention in that Vrazel et al do not disclose that the amplitude shift keying modulation has an extinction ratio of between about 5 dB and about 10 dB. However, it would have been obvious to an artisan of ordinary skill in the art to provide such extinction ratio.

Regarding claim 8, Vrazel et al disclose a transmitter apparatus for generating differential phase amplitude shift keyed optical signals, shown in Fig. 4B, comprising:

a modulator means, including at least two modulators (470 and 475) driven by data signals ( $D_1$  and  $D_2$ ), adapted to generate an optical signal using differential phase shift keying and amplitude shift keying modulation (see paragraph [0030]).

Vrazel et al disclose driving the modulators with data signals and differs from the claimed invention in that Vrazel et al do not disclose the data signals are synchronized and have the same data rate. However, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide the data signals to be synchronous and having the same data rate.

The clause "adapted to" is essentially a statement of intended or desired use. Thus, these claims do not serve to patentably distinguish the claimed



structure over that of the reference. See *In re Pearson*, 181 USPQ 641; *In re Yanush*, 177 USPQ 705; *In re Finsterwalder*, 168 USPQ 530; *In re Casey*, 512 USPQ 235; *In re Otto*, 136 USPQ 458; *Ex parte Masham*, 2 USPQ 2nd 1647.

Regarding claim 9, the at least two modulators are modulators selected from the group consisting of a Mach-Zehnder modulator, a single-waveguide modulator, or an electro-absorption modulator (see paragraphs [0036, 0058-0060]).

Regarding claim 13, as shown in Fig. 4B, the transmitter comprise a differential encoder (precoder) means coupled to the modulator means.

Regarding claim 15, Vrazel et al disclose an optical transmission system, as shown in Fig. 4B, comprising:

- a first modulator (475) adapted to receive a first data signal ( $D_2$ );

- a second modulator (470) coupled to the first modulator and adapted to receive a second data signal ( $D_1$ ), and wherein the first and second modulators are adapted to generate a multilevel coded optical signal using differential phase shift keying and amplitude shift keying modulation (see paragraph [0030]).

Vrazel et al disclose driving the modulators with data signals and differs from the claimed invention in that Vrazel et al do not disclose the data signals are synchronized and have the same data rate. However, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide the data signals to be synchronous and having the same data rate.

The clause "adapted to" is essentially a statement of intended or

desired use. Thus, these claims do not serve to patentably distinguish the claimed structure over that of the reference. See *In re Pearson*, 181 USPQ 641; *In re Yanush*, 177 USPQ 705; *In re Finsterwalder*, 168 USPQ 530; *In re Casey*, 512 USPQ 235; *In re Otto*, 136 USPQ 458; *Ex parte Masham*, 2 USPQ 2nd 1647.

8. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Epworth (US Patent No. 6,626,589) in view of Griffin (US Pub. No. 2004/0021829).

Regarding claim 18, Epworth et al disclose an optical transmission system, shown in Fig. 2, comprising:

an optical DP-ASK transmitter including at least two modulators adapted to provide an optical DP-ASK modulated signal (see col. 2, lines 37-40); and

an optical receiver including:

a DPSK receiver including a delay interferometer and a balanced receiver to detect a DPSK modulated portion of the DP-ASK modulated signal (see col. 2, lines 46-65); and

an optical intensity receiver to detect an ASK modulated portion of the DP-ASK modulated signal (see col. 2, lines 46-65; the receiver detects power or intensity of the signal).

Epworth disclose transmission of DPSK-ASK signal as discussed above, and differs from the claimed invention in that Epworth do not disclose that the DPSK-ASK signal is 4-ary. Griffin teaches generation of 4-ary optical signal (see Fig. 1 and

paragraphs [0021 and 0022]). Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide 4-ary signal generation as taught by Griffin to the optical system of Epworth. One of ordinary skill in the art would have been motivated to do such in order to increase transmission capacity.

9. Claims 3, 7, 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vrazel et al (US Pub. No. 2003/0198478) in view of Liu et al (US Pub. No. 2004/0125435).

Regarding claims 3 and 17 (as far as understood in view of 112 1<sup>st</sup> paragraph), Vrazel et al disclose phase modulation and differ from the claimed invention in that Vrazel et al do not disclose post nonlinear-phase-shift compensation. Liu et al teach the use of nonlinear-phase-shift compensation (see Fig. 1). Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide nonlinear-phase-shift compensation to the system of Vrazel et al in order to reduce nonlinear phase noise.

Regarding claims 7 and 14, Vrazel et al differ from the claimed invention in that Vrazel et al do not disclose providing pulse generation to allow for generation of RZ optical signals. Liu et al teach generation of RZ optical signals. Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was

made to provide RZ optical signals (see paragraph [0046]).

***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalzid Singh whose telephone number is (571) 272-3029. The examiner can normally be reached on Mon-Fri 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DS  
August 31, 2006

*Dalzid Singh*